

1 **BRIDGE DECK REPAIR**
2 **March 13, 1995**

3 All bridge deck surfaces designated and marked by the Engineer for repair shall be
4 prepared as follows:

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6 All concrete in the repair area shall be removed by chipping or other approved
7 mechanical means to a depth necessary to remove all loose and unsound
8 concrete. If unsound concrete exists around the steel reinforcing bars, or if the
9 bond between concrete and steel is broken, concrete must be removed to
10 provide a 20 millimeters minimum clearance around the steel reinforcing bars.
11 The chipping hammer used for removing unsound concrete shall not exceed 13
12 kilograms so the sound concrete will not be damaged. Care shall be taken in
13 removing the deteriorated concrete to not damage any of the existing deck or
14 steel reinforcing bars that are to remain in place. All removal shall be
15 accomplished by making neat vertical saw cuts and maintaining square edges at
16 the boundaries of the repair area. Saw cuts shall be made after sufficient
17 concrete removal has been accomplished to establish the limits of the removal
18 area. In no case shall the depth of the saw cut exceed 20 millimeters or to the
19 top of the top steel reinforcing bars, whichever is less. Care shall be taken to
20 not damage the steel reinforcing bars by cutting too deeply. The exposed steel
21 reinforcing bars and concrete in the repair area shall be sandblasted and blown
22 clean just prior to placing concrete. Any bridge deck outside the repair area or
23 any steel reinforcing bar inside or outside the repair area damaged by the
24 Contractor's operations shall be repaired at the Contractor's expense to the
25 satisfaction of the Engineer.

26
27 Patching concrete shall be a packaged concrete capable of achieving a cube
28 compressive strength of 20 megapascals in not more than six hours. The maximum
29 chloride ion (C1-), expressed as a percent by weight (dry) of the packaged concrete
30 shall be 0.015 percent. Aggregate extenders, up to two-thirds of that recommended
31 by the manufacturer in printed literature, may be used if approved by the Engineer.
32 In the case of a packaged mix extended with aggregate the limitation of chloride ion
33 content shall be determined on the mix as extended. Samples from the lot or lots of
34 packaged concrete and aggregate extenders to be used shall be submitted to the
35 State Materials Laboratory for preliminary approval and testing prior to incorporation
36 into the work. Fourteen calendar days will be required for testing and evaluation.

37
38 Where corrosion deterrent performance of a packaged concrete has been
39 demonstrated by independent laboratory verification, the requirement for preliminary
40 sampling and testing for chloride ion content and the chloride ion limit may be
41 waived. Preliminary samples of packaged concrete shall be required to determine
42 compliance with compressive strength requirements.

43
44 The packaged concrete shall be thoroughly mixed in a batch mixer of approved size
45 and type that distributes materials uniformly throughout the batch. The mixer shall
46 have a minimum rated capacity of 0.11 cubic meters.

47
48 The batches shall be charged into the mixer such that some water enters before the
49 packaged material. All water shall be in the drum by the end of the first one-fourth of
50 the required mixing time of one minute, minimum. The Engineer may approve a
51 shorter mixing time for special mixing equipment if tests show equal or better results.
52 When heated water is used during cold weather, the order of charging may require
53 some modification to prevent flash setting.

54
55 The Contractor shall have available at no additional cost to the State, at the time
56 work is being performed, the services of a qualified technical representative of the
57 packaged concrete manufacturer. Recommendations made by the manufacturer's

- 1 representative, on or off the jobsite, and approved by the Engineer, shall be adhered
2 to by the Contractor. The Contractor or subcontractor will not be considered to be
3 the technical representative of the manufacturer.
4
- 5 All bridge deck repair areas shall be cured in accordance with the concrete
6 manufacturer's recommendation or using wet cotton blankets as directed by the
7 Engineer until the packaged concrete has attained the specified strength. During this
8 period, all vehicular and foot traffic shall be prohibited on the repaired area.
9
- 10 All deck repair shall be completed prior to placement of the waterproofing
11 membrane.